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ABSTRACT

Data from a sample of adult participants in JTP Ohio under Title IIA of the Job Training Partnership Act (JTPA) were analyzed. Respondents were surveyed after completion of 13 weeks of JTP training. Five outcome variables were studied: weeks worked, employment status during week 13, earnings in week 13, welfare status during week 13, and school attendance status. Demographics, reason for termination from JTP, and service delivery area effects were also analyzed. Among the findings were the following: (1) preexisting differences had a significant influence on the outcomes--females, blacks, and older workers earned less and JTP services had the intended effects of increasing likelihood of employment and number of weeks worked and decreasing likelihood of being on welfare; (2) these differences were found even though indicators such as education, training, and labor market experience were controlled statistically; (3) classroom training, job search assistance, and on-the-job training increased the likelihood of employment in week 13 and the number of weeks worked thereafter and decreased the likelihood of receiving public assistance. It was concluded that JTP Ohio services have the intended effects on labor market outcomes. Reason for termination from JTP programs is a critical factor. (Twenty-two data tables and seven references are appended.) (YLB)

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STATEWIDE ANALYSIS OF THE OHIO THIRTEEN-WEEK FOLLOW-UP SURVEY OF TITLE IIA JTP CLIENTS

Lawrence Hotchkiss
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FOREWORD

In 1986, the United States Department of Labor (DOL) mandated that the economic status of Job Training Partnership Act (JTPA) clients be determined 13 weeks after completion of a Job Training Partnership (JTP) program. Prior to this mandate, relatively little information was available to DOL as to the long-term effects of participating in a JTP program. To administer the resources provided by JTPA successfully, DOL must have information on whether or not the programs that were implemented are meeting the needs of its clients. This first annual report addresses that need for information.

The study was conducted in the Evaluation and Policy division of the National Center under the direction of N.L. McCaslin, Associate Director. Dr. Lawrence Hotchkiss, Research Specialist, served as project director. We would like to thank Program Associate John Smythe and Dr. Dennis Benson, President of Appropriate Solutions, Inc., for their work in preparing this report. Special thanks are extended to Alice Worrell, Manager of Evaluation Services, Ohio Bureau of Employment Services, for her cooperation and patience as well as the helpful insights she provided.

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Ray D. Ryan
Executive Director
The National Center for Research
in Vocational Education

EXECUTIVE SUMMARY

This report presents an evaluation of JTP Ohio services to adult clients who participated under title IIA of the Joint Training Partnership Act. Data from a follow-up survey of JTP clients conducted 13 weeks after completion of JTP training were combined with data from the state Management Information Systems (MIS) system. Multivariate methods were applied to evaluate JTP Ohio services and to analyze difference in outcomes among service delivery areas (SDAs).

These analyses were designed to determine if clients benefitted from the services they received from JTP Ohio in terms of the following outcomes:

- Weeks worked during the 13-week period after program termination
- Employment status in week 13
- Earnings in week 13 of those who were employed
- Welfare status in week 13
- School attendance during week 13

To provide accurate estimates of the effects of JTP Ohio services, the analysis of these outcomes controlled for differences among the clients that existed when they applied for the program. The preexisting differences had significant influence on the outcomes evaluated by the 13-week follow-up.

- Females earned less than males.
- Blacks earned less and were more likely to be welfare recipients than whites and other minorities.
- Older workers (those 55 and older) earned less than younger workers.

These differences were found even though several indicators of human capital (education, training, and labor market experience) were controlled statistically. The results suggest that race, gender, and age discrimination operate in the labor market faced by JTP Ohio participants.

Despite the strong influence of the individual characteristics of clients, JTP services had the intended effects. Classroom training, job search assistance, and on-the-job training (OJT) increased the likelihood that former clients were employed in week 13 and increased the number of weeks worked during the follow-up

period. These services also reduced the likelihood that former clients received public assistance during week 13. Former clients who took part in classroom training and OJT also had higher earnings, but clients who received job search assistance without skill training did not.

All outcomes examined during the 13 week follow-up were influenced by those completers who entered employment upon termination of the program. Clients who were employed at termination worked more weeks, earned more, and were less likely to receive welfare support than clients who left the program for other reasons. Nevertheless, even when the effects of employment at termination are controlled, classroom training and OJT still influence overall employment during the follow-up period. The effect of job search assistance, however, was determined primarily by whether the job search was successful.

The encouraging aspect of these findings is that factors directly under control of public policy and administration do influence economic and social outcomes. Classroom training appears to be a particularly useful tool because it tends to serve those with a lower socioeconomic profile than does OJT. It appears that clients who are judged to be less job ready are assigned to classroom training, those who are considered more job ready assigned to OJT, and both groups benefit from the services they receive.

A potentially useful quantitative model to assist in evaluating SDA performance is sketched in this report. The basic idea is to observe the deviation of the adjusted mean on each outcome for each SDA from the statewide average. The adjusted means compensate for differences among SDAs in the socioeconomic composition of the clients they serve. It is possible that statistical tests of whether these adjusted means differ from the state means could be used in the evaluations. For example, incentive grants could be provided to SDAs who perform above a predetermined standard to a statistically significant degree.

The present evidence does not support the view that effectiveness of JTP services varies among SDAs, but tests for the possibility of such variations should still be included in future research and evaluation. An additive regression analysis implies that any differences among SDAs on the outcome variables are due solely to the quantity of services provided. A model including SDA x services interactions is proposed as a way to evaluate quality differences in services among SDAs.

An important aspect of the analysis conducted here is that no one is included in the sample who had not participated in JTP in some fashion. Lack of a comparison group makes it impossible to assess the overall effects of participation. Absence of a comparison group also means that SDA evaluations necessarily depend on comparisons among JTP clients in different SDAs. A type of

"grading on the curve" therefore is implied. With a comparison group it would at least be feasible to attempt to establish evaluation criteria based on the extent to which JTP clients fare better than nonclients rather than criteria based solely on whether clients in one SDA do better than clients in other SDAs.

CHAPTER 1

INTRODUCTION

The Ohio Bureau of Employment Services (OBES) administers many training programs under the auspices of the Job Training Partnership Act (JTPA). This report is part of a sequence of reports designed to provide OBES with detailed data that can be used to help evaluate these training programs. One of these reports has already been submitted to OBES, and it is entitled Ohio Thirteen-Week Follow-Up Survey of Title IIA and Title III JTP Clients. This report provides OBES with the data required to complete the Department of Labor's JTPA Annual Status Report (JASR). The present report contains the statewide analysis of JTP Ohio title IIA clients. In addition, reports containing detailed data by SDA for title IIA clients, a statewide summary for title III clients, and a report on employers of JTP Ohio title IIA clients are included in the sequence.

Data for these reports are taken from three sources. The primary data source is a follow-up survey of individuals who received training under JTP Ohio training programs. A large sample (N = 4012 completions) of individuals receiving training under title IIA of the act and a small statewide sample (N = 251 completions) of individuals receiving training under title III of the act are included in this survey. The second source of information was a sample of employers of former JTP Ohio clients. This sample provides data for the employer report. The final source of information comes from OBES's Management Information Systems (MIS). The MIS files were merged with the survey data to produce the data summaries contained in these reports. The present report utilizes data from the client survey and the MIS files.

This report is divided into four chapters. Chapter 2 explains the methodology of the study. Chapter 3 reports the findings. The final chapter summarizes the findings and evaluates them.

CHAPTER 2

METHODS

Sampling

In determining the title IIA sample for the state of Ohio, we followed in detail the procedures outlined in the Technical Assistance Guide (TAG) provided by the Department of Labor (U.S. Department of Labor 1986). As prescribed by TAG, title IIA sample sizes were calculated for each SDA in a manner necessary to assure a preset level of precision with a 95 percent confidence level. In drawing these samples, if an SDA had fewer than 200 terminees, then all terminees in that SDA were included in the sample. If, on the other hand, an SDA had more than 200 terminees, then the procedures outlined in exhibit 3.11 of TAG were used to select the sample size.

Once the proper sample size was determined, it was then multiplied by a factor of 1.1 in order to obtain an oversample. There are two reasons for oversampling. First, by oversampling, we avoided sampling bias problems that can be caused by changing sampling proportions due to an SDA wrongly estimating the number of terminees. Second, the oversample was used to provide a backup pool of cases from which to draw replacements in the event those in the primary sample must be dropped due to disability or death.

All statewide statistical summaries contained in this report were calculated using sample weights. Sample weights were used to correct for unequal sampling probabilities for different SDAs, welfare status, and for the difference in response rates between those employed and those not employed at termination. The weights are defined as the proportion of individuals in the population for each combination of SDA, welfare status, and employment status divided by the total proportion of completions in the sample. The sample weights yield precisely the same results within each SDA for the total sample and welfare recipients as did the adjustment for nonresponse bias displayed in TAG.

Data Collection

The first step in the data collection process was to attempt to complete each interview by telephone. The telephone interview followed in detail the DOL requirements as described in TAG. After 2 weeks, if the interviewer was unable to interview the terminee successfully by phone, then a mail version of the questionnaire was sent. Five days after the mail survey was sent, a combination thank-you and reminder letter was mailed to the terminee. If, after an additional 5 days, the survey was not returned, then a second mail survey was sent. If the second mail survey was not returned and the terminee was still not successfully interviewed by telephone, then his or her file was classified as incomplete.

Included in the mailouts and in all the telephone messages left for the terminee was the 800 telephone number for the ASI survey center. This number was left with instructions encouraging the terminee to call in to complete the interview. The "call-in" method of data acquisition proved highly successful and accounted for more completed interviews than either the initial phone calls or the mail survey.

Statistical Analyses

Results of the statistical analyses are reported in bivariate and multivariate tables. Five dependent variables are included in the analyses; these are (1) weeks worked during the 13-week follow-up period, (2) whether employed during week 13 of the follow-up period, (3) earnings during week 13 for those who worked, (4) whether receiving public assistance (welfare) during week 13, and (5) whether attended school during the 13-week follow-up period. Table entries are averages (or means) for weeks worked and earnings; entries are percentages for the remaining variables.

Regression analysis was applied to help isolate the net contributions of several variables to the five outcomes. Results of the regressions generally are presented in tabular format paralleling presentation of the bivariate relationships. In these tables, entries are adjusted means or percentages on the dependent variables rather than observed values. Differences among the adjusted entries indicate the net impact of a given variable (e.g., race, gender, classroom training) while controlling for the remaining independent variables.

The adjusted entries are calculated to satisfy two criteria: (1) Differences between adjusted means or percentages are consistent with effect estimates in the regression analyses, and (2) the (weighted) average of the cell entries equals the overall average in the sample. (See, e.g., Cohen and Cohen 1983). Take as an example, the adjusted mean earnings by gender (table 4). The overall average earnings irrespective of gender is $206.72. The regression coefficient associated with gender in the multiple regression for earnings is 45.17. The adjusted mean for males in table 4 is $228.18; for females it is $183.00. The difference between the average for males and the average for females is $228.18 - $183.00 = $45.18 which is the value of the regression coefficient (discrepancy due to rounding). There are 2,747 females and 2,887 males in the sample. The grand mean earnings in the sample is the average of the weighted means for females and males: $(2747 \cdot \$183 + 2887 \cdot \$228.18)/5634 = \$206.15$ (discrepancy due to rounding).[1]

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[1]Total sample sizes were used in the adjustments rather than number of completers, or, in this case, number of employed completers.

The primary advantages of adjusted means or percentages over reporting regression coefficients is that the adjusted values provide more information and permit ready comparison to the bivariate tables. The primary disadvantages are that the adjusted values are not as parsimonious and are more cumbersome to calculate than the regression coefficients.

Variables

This section contains the definitions of all the variables used in the report. The follow-up data are taken from the survey described above. The other variables were defined from the Ohio Bureau of Employment Services MIS system. The source of data used to define each variable is indicated with the definition.

- Age--The data are divided into 3 age groups these being (source--MIS):

  --Ages 29 and younger
  --Ages 30-54
  --Ages 55+

- Gender--(Source--MIS):

  --Male (coded as 1.0 for regression analyses)
  --Female

- Race--The data are divided into 3 racial categories these being (source--MIS):

  --White
  --Black
  --Other--This group includes Hispanics, Asians, and Others.

- Welfare status at follow-up--This variable indicates whether or not an individual received public assistance at follow-up (source--survey):

  --yes
  --no

- Education status at follow-up--This variable indicates whether or not an individual is enrolled in school at follow-up (source--survey, q. 4):

  --yes
  --no

- Types of services--This variable specifies the types of services the JTP client received. We have chosen to use the three most common types of services (source--MIS transaction records):

--On the job training/no on the job training
--Job search/No job search
--Classroom teaching/No classroom teaching

- Reason for ending training--This variable specifies why a JTP client left a JTP training program. These variables contain five categories; these are (source--MIS):

  --Entered employment A01-A05
  --Exceeded program duration C12
  --Exceeded 90 day hold status C14
  --Poor attendance C06,C07
  --Other

- Education Status at Termination--This variable specifies the highest level of education the JTP client attained (source--MIS):

  --High school dropout--Grades < 12
  --High school graduate--Grade 12
  --Some college--Grade 13,14,15
  --16+--College graduate

- Barriers to employment--Three variables are used here to describe the most common barriers to employment a JTP client might possess (source--MIS):

  --Offender (yes/no)
  --Handicapped (yes/no)
  --Limited English (yes/no)

- Family status--This variable specifies the position of the individual within his/her household (source--MIS):

  --Single parent with ≥ one child under 6 years old
  --Single parent with ≥ one child 6-17 years old
  --Parent in two parent home
  --Other family member
  --Unrelated individual
  --Other

- Public assistance at application--This variable specifies whether or not a respondent received public assistance at the time of application to participate in JTP programs (source--MIS):

--yes
--no

- Welfare status at application--If a JTP client receives welfare this variable specifies the different types of welfare the client may receive (source--MIS):

  --AFDC
  --General
  --Not receiving public assistance

- Employment at week 13 (source--survey):

  --Yes
  --No

- Earnings in week 13 in dollars (set to missing if not employed; source--survey):

- Weeks worked during the 13-week follow-up (source--survey):

- Welfare status at week 13 (source--survey):

  --Yes--received AFDC, general or refugee assistance
  --No--received no public assistance

- Received layoff notice at application (source--MIS):

  --Yes
  --No

- Labor-force status at application (source--MIS):

  --Employed
  --Unemployed (not working but looking for work)
  --Not in labor force (not working, not looking)

- Date last worked at application (source--MIS): Converted to a single decimal number--units are years.

- Wage of last/current job at application (source--MIS):

- Hours of last/current job at application (source--MIS):

- Family income at application (source--MIS) (this variable converted to logarithms to reduce skew):

- Weeks worked in year prior to application (source--MIS):

- Labor-market experience (source--survey) Defined as number of years since last enrolled in full-time school during which respondent worked at least 6 months.

CHAPTER 3

FINDINGS

The findings are organized into six sections. Section one presents basic descriptive data for all variables used in the analyses. The remaining sections focus on five outcome variables. The outcomes are (1) weeks worked during the 13-week follow-up period, (2) employment status during week 13, (3) earnings in week 13 for those employed during the 13th week, (4) welfare status during week 13, and (5) school attendance status during the 13-week follow-up period. The intended impact of JTP programs on the first four of these outcomes is clear; JTP is supposed to increase weeks worked, increase the chance of employment, increase pay, and reduce the likelihood of receiving public assistance. Its intended impact on schooling is not so clear. Under certain circumstances, it would be desirable to stimulate school attendance; in other cases, work might be viewed as an alternative to school. Schooling is included as an outcome because it is a major activity that tends to compete with work.[3]

Sections two-five of the chapter focus on independent variables that may influence the five outcomes. Section two analyzes demographics--age, race, and gender effects. Section three examines effects of JTP Ohio services and reason for termination from JTP. Section four investigates SDA effects, and section five analyzes effects of several additional variables, including education and welfare status. The last section summarizes the findings.

The analysis of the effects of services, effects of reason for termination, and SDA effects are designed to provide a preliminary model for using data of the type analyzed here to evaluate JTP programs. Two key issues are addressed. First, to what extent do SDAs differ on the five outcomes after controls for background variables that influence the outcomes are implemented? Second, to what extent are SDA differences due to the quantity and effectiveness of services provided. Only preliminary answers to these questions can be provided here due to lack of data on local labor market demand and lack of a comparison group; however, the preliminary findings are indeed interesting.

Descriptive Data

The means and standard deviations of each variable used in this report are shown in table 1. The generally low socioeconomic status (SES) of the sample is revealed in these statistics. The percentages of respondents (adjusted for nonresponse rate and SDA

[3]Ideally, a simultaneous analysis of the impact of work and school on each other would be conducted, but this analysis is beyond the scope of the present report.

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR ALL VARIABLES
USED IN THE ANALYSES

Variable	Variable Code Name	Mean	Standard Deviation	Number in Category
Employed at Termination	EMPLTERM	57.679	49.411	5634
Employed at Follow-Up	EMPLFLUP	58.274	49.317	4012
Average Pay in Week 13	PAYWK13	206.720	117.615	2367
Average Number of Weeks Worked during follow-Up	WEEKSWRK	7.635	5.801	4002
Education Status at Follow-Up	ATNDSCHL	9.108	28.777	3974
Labor Market Experience	LMEXPER	8.066	7.272	5634
Number of Weeks Worked in Year Prior to Application	WKSWRK1	16.409	16.134	5634
Welfare Status at ~~Termination~~ Follow-up	WELSTA2	29.479	45.601	4012
Sex	SEX	52.506	49.941	5634
Limited English Proficiency	LEP	.779	8.790	5634
Black	BLACK	32.258	46.750	5634
Other Race	OTHRRACE	3.334	17.954	5634
AFDC Recipient at Application	AFDCAPL	29.174	45.460	5634
General Recipient at Application	GENRLAPL	17.900	38.339	5634
Exceeded Program Duration	TOOLONG	2.612	15.951	5634
Exceeded 90 Day Hold Status	EXHOLD	9.191	28.892	5634
Low Attendance	LOATTEND	9.762	29.683	5634
Ages 30 to 54	AGE3054	51.747	49.974	5634
Ages 55+	AGE55PL	3.670	18.803	5634
Handicapped	HANDICAP	7.087	25.663	5634
Dropout	DROPOUT	27.913	44.861	5634
Some College	SMCOL	18.813	39.085	5634
College Graduate	COLGRAD	2.832	16.589	5634
Offender	OFFENDER	9.346	29.111	5634
Not in Labor Force	NOTINLF	14.465	35.178	5632
Unemployed at Application	UNEMPL	74.547	43.564	5632
Hours per Week at Last Job Prior to Application	HOURS1	2.554	8.566	5614
Date of Last Job Prior to Application	LASTWRK1	84.313	2.855	4240
Last Wage	LASTWGE1	3.167	2.652	5634
Natural Log of Family Income	LNFINC1	3.277	3.810	5634
Number of Weeks Laid Off Prior to Application	LAYOFFN	30.286	45.953	5634
Welfare Dollars at ~~Termination~~ Follow-up	WELFDOL	117.133	148.134	5438
Job Search	JBSRCH	38.217	48.596	5634
Classroom Training	OCC_CLAS	32.004	46.653	5634
On the Job Training	OJT	25.679	43.690	5634
Single Parent with ≥ one Child Ages one to 6	SP1_6	10.815	31.059	5634
Two Parent Home	TWOPAR	26.019	43.878	5634
Other Family Member	OTHFAMM	7.056	25.611	5634
Single Parent with ≥ one Child Ages 7 to 17	SP_617	.150	.357	5634

sampling stratification) employed at follow-up was under 60. The average weeks worked out of 13 is only 7.6. The average weekly earnings for those working in week 13 of the follow-up period was $206; this calculates to $895 gross earnings per month. Over 29 percent were on welfare. Over 30 percent are black. Thirty percent had received notice of layoff at the time of application. These data document the special nature of the sample.

Generalization of the findings reported here to the entire population would, of course, be risky. So long as the profile of JTP clients remains stable, however, generalization to JTP clients is not threatened.

Age, Race, and Gender

This section analyzes differences on the five outcomes by age, race, and gender. The presentation proceeds in stages from simple to complex. First, bivariate differences on the five outcomes are shown by age, race, and gender. Second, a multiway crossbreak showing simultaneous differences on the outcomes by age, race, and gender is examined. Next, a multivariate analysis including simultaneous controls for several variables that are likely to influence the outcomes is presented. Finally, the age-race-gender tables are presented separately by welfare status at the time of application.

Table 2 shows the bivariate associations between each of the 5 dependent variables and age, race and gender. Although all 5 variables display some differences in average value or percentage across the 3 age categories, the differences are statistically significant only for earnings, school attendance, and welfare status. Age shows a strong association with earnings and welfare status. The association between age and earnings is curvilinear. From the youngest age category to middle category earnings increase; they decline again when comparing the middle category to the oldest category (55 and older). Of course, the relatively small number of respondents (128 completers) in the oldest age group could account for the apparent nonlinearity, but the curvilinear relationship between age and earnings has been observed frequently in past research (e.g., Mincer 1974). Additionally, a nonlinear regression using the exact age variable rather than the three category grouping was conducted with earnings and log earnings as outcomes. These regressions show a strong nonlinear component of the relationship between age and earnings.[4]

The relationships between age and welfare status and between age and education status also are not linear, but the changes across age groups consistently decline. The percentage attending

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[4]In these data, the regressions show that earnings per week increase until approximately age 36-40 and decline thereafter. The earnings and log-earnings specifications agree fairly closely regarding age of maximum earnings.

TABLE 2

MEANS/PERCENTAGES FOR FIVE VARIABLES BY RACE, BY GENDER, AND BY AGE (BIVARIATE)

Variables	Age			Race			Gender	
	22-29	30-54	55+	White	Black	Other	Male	Female
Average Number of Weeks during Follow-Up	7.78	7.52	7.58	8.17	6.34	8.60****	8.21	7.04****
Employment Rate at Follow-Up	58.93	57.68	59.01	62.28	48.97	61.56****	62.24	54.21****
Average Weekly Earnings at Follow-Up	196.00	217.81	179.27****	214.19	181.88	236.04****	230.63	178.52****
Education Status at Follow-up. Percentage of Individuals Receiving Education.	10.15	8.74	2.76**	7.91	11.42	13.20***	7.83	10.41**
Welfare Status at Follow-up. Percentage of Individuals on Welfare.	32.19	28.81	9.03****	23.77	42.47	27.69****	23.05	36.08****
Response Rate	69.17	72.65	78.53	73.44	65.69	66.47	69.24	73.28
Sample Size	2608	2863	163	3998	1466	170	2887	2747

NOTES: All values except response rates are weighted to compensate for different sampling rates across SDAs and different completion rates by employment status at termination and by welfare status at termination.

Sample sizes are number drawn in sample, not number of completers. To find the number of completers, multiply the response rate by the sample size.

* p<_.05
** p<_.01
*** p<_.001
**** p<_.0001

school decline slowly between the youngest and middle age categories and much more rapidly between the middle and upper age categories. Neither of these nonlinearities are strong, however.

The relationships between race and the five outcomes corresponds to past findings (e.g., Parcel and Mueller 1983). Blacks in this sample work less and earn less than members of other races. They attend school more often than whites and less often than other nonblacks. They also are much more likely to receive public assistance than members of the other two racial categories. Also in line with past findings, females earn less and work less than males. They also are more likely to attend school and more likely to be on welfare than males.

Table 3 shows the simultaneous three-way cross-classification of means/percentages for the five outcomes by age, race, and gender. Cell sizes including the oldest age category and the "other" racial category, often are too small to justify strong conclusions. However, the primary patterns observed in table 2 tend to persist in table 3. Where sample sizes are adequate, the curvilinear relationship between age and earnings is observed.[5] Where sample sizes are moderate to large, blacks generally earn less and work less than whites or others. Black females in the middle age group seemed to earn slightly more than white females in the same category, however, the difference in earnings between blacks and whites is much smaller among females than among males. Females also earn less and work less than males. The earnings discrepancy between males and females is smallest among blacks. The large differences between blacks and nonblacks in the likelihood of receiving public assistance also holds up within age and gender categories.

The data in table 3 are multivariate; they present relationships between each independent variable (age, race, gender) while controlling for the other two independent variables. It is possible to examine how the relationship between any outcome and each independent variable differs across levels of the other two independent variables. This detail comes at the expense of loss of sample size and difficulty of interpretation, however.

The data in table 4 present a multivariate analysis that is different than the data in table 3. Each average/percentage in table 4 is adjusted for an array of control variables. Separate multiple regressions were conducted for each outcome. Each regression equation contained age (using the same three categories as before), race, and gender plus numerous additional controls. The means are adjusted in such a way that their differences always equal the value of a corresponding regression coefficient and their weighted average over all categories of each independent variable equals the overall average (grand mean) see chapter 2.

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[5]Statistical tests of all the possible relationships are not reported because there are too many of them to tabulate conveniently.

TABLE 3

MEANS/PERCENTAGES FOR FIVE VARIABLES BY RACE, GENDER, AND AGE (MULTIVARIATE)

Variables	White						Black						Other					
	Male			Female			Male			Female			Male			Female		
	Age 22-29	Age 30-54	Age 55+	Age 22-29	Age 30-54	Age 55+	Age 22-29	Age 30-54	Age 55+	Age 22-29	Age 30-54	Age 55+	Age 22-29	Age 30-54	Age 55+	Age 22-29	Age 30-54	Age 55+
Average Number of Week Worked during Follow-Up	8.77	8.43	8.21	7.75	7.72	7.23	7.68	6.54	8.74	5.51	5.86	5.69	9.04	9.37	3.00	7.81	7.98	--
Average Weekly Earnings at Follow-Up	222.31	262.57	231.43	180.96	182.60	116.94	178.21	200.49	208.11	162.09	186.63	94.32	219.44	273.43	320.00	165.20	264.30	--
Employment Rate at Follow-Up	65.47	63.86	62.51	58.11	61.07	58.27	61.94	49.58	65.47	43.10	41.15	39.73	62.07	66.93	100.00	53.04	58.55	--
Education Status at Follow-Up. Percentage of Individuals Receiving Education	7.17	7.04	0	9.82	9.08	4.51	14.39	6.13	9.37	12.20	13.54	0	18.96	6.06	0	16.61	9.85	--
Welfare Status at Follow-Up. Percentage of Individuals on Welfare	21.09	20.18	0	32.93	26.57	8.76	28.81	36.56	14.49	59.54	44.74	32.82	27.73	14.86	0	31.19	44.84	--
Response Rate	69.58	73.58	79.71	72.64	77.31	76.19	60.52	60.37	92.86	67.36	71.15	68.75	68.52	60.87	100.00	73.33	64.10	--
Sample Size	1006	1060	69	826	974	63	309	328	14	383	416	16	54	46	1	30	39	0

NOTES: The overall differences among the means/percentages in this table are highly statistically significant for all 5 variables ($p \leq .0001$). Individual comparisons are too numerous to display.

All values except response rates are weighted to compensate for different sampling rates across SDAs and different completion rates by employment status at termination and by welfare status at termination.

Sample sizes are number drawn in sample, not number of completers.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

TABLE 4

ADJUSTED MEANS FOR FIVE VARIABLES BY AGE, BY RACE, AND BY GENDER

Variables	Age			Race			Gender	
	22-29	30-54	55+	White	Black	Other	Male	Female
Average Number of Weeks Worked During Follow-Up	7.91	7.45	6.97*	7.76	7.27	8.76***	7.50	7.78
Employment Rate at Follow-Up	60.21	56.91	53.95	59.14	55.86	64.90	56.88	59.82
Average Weekly Earnings at Follow-Up	199.66	215.07	174.68****	212.10	192.40	241.31****	228.18	183.00****
Education Status at Follow-Up. Percentage of Individuals Receiving Education.	7.66	10.11	12.61*	8.44	10.33	10.18	9.45	8.73
Welfare Status at Follow-Up. Percentage of Individuals on Welfare.	29.96	29.26	26.75	27.47	33.91	25.36****	29.98	28.92

NOTES: All values except response rates are weighted to compensate for different sampling rates across SDAs and different completion rates by employment status at application and by welfare status at application.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

The independent variables included in the regressions are as follows:

- Age (2 binary variables--age 30-54 and age 55 & older)
- Race (2 binary variables--black, other)
- Gender
- Education (3 binary variables--dropout, some college, college graduate)
- Welfare status at application (2 binary variables--AFDC, general)
- Welfare amount (dollars) at application
- Family status at application (four binary variables--single parent with children under 6, singe parent with children ages 6 to 17, parent in two parent family, other family member [unrelated individual omitted])
- Barriers to employment at application (three binary variables--LEP, handicap, offender)
- Received layoff notice at time of application
- Labor force status at application (two binary variables--unemployed, not in labor force)
- Date last worked at the time of application
- Wage of last job at the time of application
- Hours of the last job at the time of application
- Log of family income at the time of application
- Weeks worked in year prior to application
- Labor market experience (estimated from the survey)
- Whether received occupational classroom training
- Whether received OJT
- Whether received job search assistance.
- Reason for termination (four binary variables--entered employment, exceeded program duration limits [C12], exceeded 90 day hold [C14], low attendance [C06, C07])

A complete definition of the variables is given in the previous chapter.

The extensive set of control variables used to produce the results in table 4 statistically "equalize" the effects of differences among participants that existed prior to their entry into JTP Ohio. Despite the use of these controls, older workers, blacks, and females were still found to earn less than younger workers, whites, and males. Since these controls include indicators of education and work experience (human capital) that influence earnings, the results suggest that age, race, and sex discrimination operate in the labor market faced by JTP Ohio participants.

The much higher incidence of public assistance among females shown in table 2 is eliminated when controls for preexisting differences among participants are used to produce the results in table 4. Welfare status at application was one of these control variables. The elimination of the gender difference by controlling welfare status at application means females are no more likely to change their status from application to follow-up than males or nonwhites. Racial differences in the percentage receiving welfare are also substantially reduced by the controls, but remain statistically significant. Blacks are more likely than whites or other minorities to receive welfare at follow-up, even when their welfare status at application is controlled.

Table 5 displays the relationships between each outcome and age, race, and gender separately for those who were receiving public assistance and those who were not receiving public assistance at the time of application. The advantage of table 5 over table 4 is that one can determine from table 5 whether the basic relationships are different for those receiving public assistance at the time of application than for those who were not. Table 4, on the other hand permits more controls since the type of interactions allowed in table 5 are assumed not to exist in table 4.

The primary patterns of differences in the outcomes among the age categories, among the racial groups, and between males and females are the same irrespective whether or not the respondent was receiving public assistance at the time of application. However, racial differences in earnings are stronger among those not receiving public assistance at application than for those receiving assistance.

Table 6 presents the simultaneous cross tabulations of means/percentages on the five outcomes by welfare status at application, age, race, and gender. Sample sizes here often are too small to allow firm conclusions, but the main patterns observed in table 3 also show up in table 6. An interesting anomaly in the table is that the percentage of black males receiving public assistance at application who were employed at follow-up drops precipitously between the youngest age group (51.66 percent) and

TABLE 5

MEANS/PERCENTAGES OF FIVE VARIABLES FOR WELFARE RECIPIENTS AND FOR NONWELFARE RECIPIENTS BY AGE, BY RACE, AND BY GENDER

Welfare Recipients at Application

Variables	Age			Race			Gender	
	22-29	30-54	55+	White	Black	Other	Male	Female
Average Number of Weeks Worked during Follow-Up	6.30	5.89	5.50*	6.81	5.00	6.22****	6.50	5.79**
Employment Rate at Follow-Up	46.52	44.56	45.70	51.18	37.42	43.14****	48.34	43.53*
Average Weekly Earnings at Follow-Up	180.53	209.97	182.91**	199.38	178.65	175.14*	214.54	174.67****
Education Status at Follow-Up. Percentage of Individuals Receiving Education.	11.62	10.29	3.97	8.87	13.70	11.37**	8.63	12.37**
Welfare Status at Follow-Up. Percentage of Individuals on Welfare.	57.19	55.93	51.66	51.27	64.18	54.81****	50.74	60.44****
Response Rate	66.93	70.03	73.91	70.64	65.01	61.70	64.86	71.45
Sample Size	1524	1525	23	1969	1009	94	1366	1706

Table 5--Continued

Not Welfare Recipients at Application

Variables	Age			Race			Gender	
	22-29	30-54	55+	White	Black	Other	Male	Female
Average Number of Weeks Worked During Follow-Up	9.16	8.76	7.84*	8.99	8.22	10.70**	9.16	8.45**
Employment Rate at Follow-Up	70.47	67.68	60.64	68.97	65.07	77.89	69.87	66.20
Average Weekly Earnings at Follow-Up	205.48	225.26	178.93***	220.81	184.47	265.96****	236.75	181.37****
Education Status at Follow-Up. Percentage of Individuals Receiving Education.	8.78	7.56	2.62	7.33	8.23	14.89	7.39	8.21
Welfare Status at Follow-Up. Percentage of Individuals on Welfare.	8.96	8.16	3.81	7.19	12.17	3.63**	7.84	8.71
Response Rate	72.32	75.64	79.29	76.15	67.18	72.37	73.18	76.27
Sample Size	1084	1338	140	2029	457	76	1521	1041

NOTE: All values except response rates are weighted to compensate for different sampling rates across SDAs and by welfare status and employment status at application.

Sample sizes are number drawn in sample, not number of completers. To find the number of completers, multiply the response rate by the sample size.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

TABLE 6

MEANS/PERCENTAGES FOR FIVE VARIABLES BY GENDER, RACE, AGE: AND BY WELFARE STATUS AT TERMINATION

Females: Welfare Recipients

Variables	White			Black			Other		
	Age			Age			Age		
	22-29	30-54	55+	22-29	30-54	55+	22-29	30-54	55+
Average Number of Weeks Worked during Follow-Up	6.41	6.57	6.50	4.82	5.02	2.14	7.41	5.47	--
Employment Rate at Follow-Up	46.78	51.04	74.81	37.21	36.53	16.45	44.81	43.27	--
Average Weekly Earnings at Follow-Up	175.63	175.37	161.84	157.48	193.15	123.00	154.28	147.06	--
Education Status at Follow-Up. Percentage of Individuals Receiving Education	10.44	9.33	12.90	14.30	16.26	0	14.67	17.09	--
Welfare Status at Follow-Up. Percentage of Individuals on Welfare	55.16	54.78	58.38	71.78	63.76	58.22	38.93	72.86	--
Response Rate	70.24	75.10	87.50	68.35	71.10	75.00	69.23	63.64	--
Number in Category	531	498	8	316	301	4	26	22	0

Males: Welfare Recipients

Variables	White			Black			Other		
	Age			Age			Age		
	22-29	30-54	55+	22-29	30-54	55+	22-29	30-54	55+
Average Number of Weeks Worked During Follow-Up	7.50	6.93	10.47	6.66	4.17	4.36	5.27	6.28	---
Employment Rate at Follow-Up	54.02	53.07	68.36	51.66	29.87	24.83	40.30	43.81	---
Average Weekly Earnings at Follow-Up	213.48	237.32	239.54	159.96	215.65	194.00	192.20	233.38	---
Education Status at Follow-Up. Percentage of Individuals Receiving Education	7.72	7.59	0	16.71	6.9	0	10.69	0	---
Welfare Status at Follow-Up. Percentage of Individuals on Welfare	47.36	46.78	0	52.90	60.80	75.17	69.37	42.65	---
Response Rate	66.67	70.15	50.00	56.35	57.92	80.00	56.52	56.52	---
Number in Category	447	479	6	181	202	5	23	23	0

Table 6--Continued

Females: Not Welfare Recipients

Variables	White			Black			Other		
	Age			Age			Age		
	22-29	30-54	55+	22-29	30-54	55+	22-29	30-54	55+
Average Number of Weeks Worked during Follow-Up	9.29	8.49	7.31	7.96	7.37	7.01	9.45	11.39	--
Employment Rate at Follow-Up	71.08	67.71	56.48	63.99	57.81	47.26	86.18	79.34	--
Average Weekly Earnings at Follow-Up	184.98	186.21	110.53	171.62	179.23	91.09	188.07	351.32	--
Education Status at Follow-Up. Percentage of Individuals Receiving Education	9.12	8.90	3.59	4.68	8.69	0	24.43	0	--
Welfare Status at Follow-Up. Percentage of Individuals on Welfare	7.49	7.91	3.40	16.14	10.59	24.60	0	6.71	--
Response Rate	76.95	79.62	74.55	62.69	71.30	66.67	100.00	64.71	--
Number in Category	295	476	55	67	115	12	4	17	0

Males: Not Welfare Recipients

Variables	White			Black			Other		
	Age			Age			Age		
	22-29	30-54	55+	22-29	30-54	55+	22-29	30-54	55+
Average Number of Weeks Worked during Follow-Up	9.39	9.20	8.09	8.42	8.86	9.79	11.00	11.03	3.00
Employment Rate at Follow-Up	71.05	69.32	62.19	69.45	68.80	75.17	73.33	79.29	100.00
Average Weekly Earnings at Follow-Up	225.58	272.35	230.95	188.12	194.07	209.22	227.18	288.22	320.00
Education Status at Follow-Up. Percentage of Individuals Receiving Education	6.90	6.76	0	12.71	5.37	11.60	23.38	9.52	0
Welfare Status at Follow-Up. Percentage of Individuals on Welfare	8.27	6.71	0	11.23	12.92	0	6.20	0	0
Response Rate	71.91	76.42	82.54	66.41	64.29	100.00	77.42	65.22	100.00
Number in Category	559	581	63	128	126	9	31	23	1

NOTES: The overall differences among the means/percentages in this table are highly statistically significant for all 5 variables ($p \leq .0001$). Individual comparisons are too numerous to display.

All values except response rates are weighted to compensate for different sampling rates across SDAs and different completion rates by employment status at termination and welfare status at termination.

Sample sizes are number drawn in sample, not number of completers. To find the number of completers, multiply the response rate by the sample size.

the middle age group (29.87 percent). No other difference in employment rate of this magnitude occurs across age groups. The sample sizes (completers = 102, 117), though fairly small, are not small enough to have generated this difference through random sampling error. This finding suggests that receiving welfare may have a fundamentally different impact on older black men than on young black men.

Table 7 shows adjusted means by age, by race, and by gender separately for those on public assistance at application and those not on public assistance. Identical procedures used for table 4 were used here, (except that welfare status at application was omitted from the regression specifications). The curvilinear relationship between age and earnings and racial differences in earnings noted above remains for those not on welfare at application, but earnings differences by age and race do not occur among welfare recipients (at application). Gender differences in earnings are strong irrespective of welfare status at application. Racial differences in weeks worked occur for both welfare recipients and those not receiving welfare. Gender differences in weeks worked occur only among welfare recipients at the time of application.

JTP Ohio Services and Reasons for Termination

Services received by JTP Ohio clients were classified into three types--occupational classroom training, OJT, and job search assistance. Reasons for termination were classified into five categories: (1) entered employment, (2) exceeded program duration limits (C12), (3) exceeded 90-day hold limit (C14), (4) poor attendance (C06, C07), and (5) other. A primary goal of the analysis is to determine the impacts of services and reason for termination on weeks worked, employment, earnings, welfare status, and schooling.

In conducting these analyses, it was assumed that services and reason for termination are sequential rather than simultaneous, as depicted in figure 1.

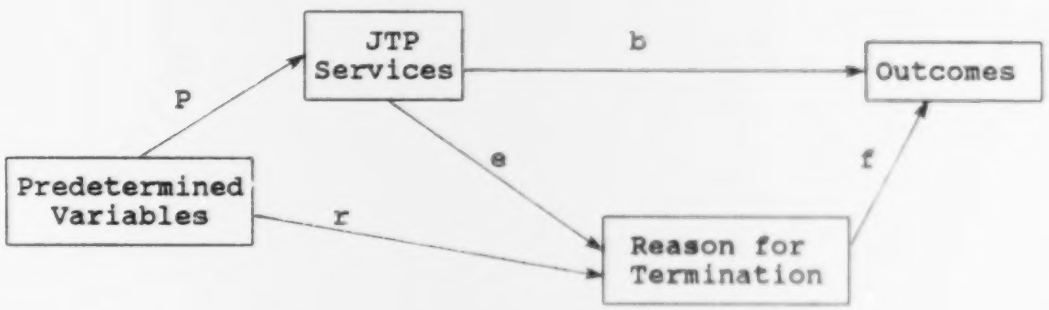

Figure 1. Model of effects of services and reason for termination

TABLE 7

ADJUSTED MEANS/PERCENTAGES FOR FIVE VARIABLES FOR WELFARE RECIPIENTS AND NONWELFARE RECIPIENTS BY AGE, BY RACE, AND BY GENDER

Welfare Recipients at Application

Variables	Age			Race			Gender	
	22-29	30-54	55+	White	Black	Other	Male	Female
Average Number of Weeks Worked During Follow-Up	6.31	5.88	4.95	6.43	5.57	6.57***	5.71	6.37*
Employment Rate at Follow-Up	46.47	44.61	41.74	48.37	41.46	47.32**	43.19	47.31
Average Weekly Earnings at Follow-Up	184.11	199.35	202.08	195.30	187.77	188.20	216.47	172.53****
Education Status at Follow-Up, Percentage of Individuals Receiving Education.	9.39	12.17	16.93	9.82	12.39	9.23**	11.53	10.32
Welfare Status at Follow-Up, Percentage of Individuals on Welfare.	56.83	56.13	57.87	53.47	60.95	51.99**	57.90	55.36

Not Welfare Recipients at Application

Variables	Age			Race			Gender	
	22-29	30-54	55+	White	Black	Other	Male	Female
Average Number of Weeks Worked During Follow-Up	9.20	8.69	8.08	8.83	8.73	10.68*	8.83	8.91
Employment Rate at Follow-Up	71.38	66.69	62.32	67.83	68.34	80.94	67.24	69.99
Average Weekly Earnings at Follow-Up	208.71	222.91	179.94**	220.83	188.92	270.85****	233.03	186.94****
Education Status at Follow-Up, Percentage of Individuals Receiving Education.	6.16	8.78	9.25	7.55	7.72	12.23	7.83	7.58
Welfare Status at Follow-Up, Percentage of Individuals on Welfare.	8.74	8.14	5.13	7.25	11.71	2.37**	8.32	8.03

NOTES: Statistical significance refers to tests of hypothesis that all means for a given independent variable (e.g. classroom instruction) are equal.

All values are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

To observe the total effects of services, one must exclude control for reason for termination. To observe the direct effect of services, control for reason for termination must be added. In figure 1, the direct effect is represented by arrow b. The total effect is the sum of the direct effect and the indirect effect: b + ef.

As a base of comparison, table 8 shows the bivariate relationships between each of the outcomes and type of service; these differences show the basic relationships without any controls. Table 9 displays the same relationships, first under control for all independent variables except reason for termination, then for all the factors used as controls in previous tables including reason for termination. It is clear from table 9 that the JTP services do influence the outcomes. The total effects of all three services are positive on weeks worked and employment at follow-up, and they are negative on the likelihood of receiving public assistance. Additionally, classroom training and OJT improve earnings. All these effects are highly statistically significant and fairly strong. The total effects of the three types of services on education status are negative and significant.

The importance of reason for termination as a mediating factor between services and the outcomes is amply supported in table 9. All the total effects are substantially reduced after controlling for reason for termination. Effects of job search are entirely due to reason for termination, except on education status. This result regarding job search is sensible. One would expect that its impact on employment variables after 13 weeks would be determined primarily by whether the job search was successful. A successful job search is indicated by "entered employment." Entered employment is the most important category of the variable reason for termination.

It should also be noted that a substantial part of the total effect of OJT on weeks worked and employment at follow-up also operates through reason for termination. It is likely that many individuals receiving OJT continue working in the firm where they received the OJT after ending their JTP-sponsored training.

It is possible that job search is more effective when combined with good classroom training or OJT than when used in isolation. To test this possibility, job search x classroom and job search x OJT interactions were included in additional regression analyses (not included in any of the tabulations). These regressions included the full complement of independent variables used in other calculations plus the interaction terms (see Pindyck and Rubinfeld [1981] for description of Chow test). Most of the interaction terms were not statistically significant. However, the negative direct effect of job search on school attendance holds only for those who did not engage in OJT; the direct impact of job search on school attendance is essentially zero for those

TABLE 8

AVERAGES/PECENTAGES FOR FIVE VARIABLES BY TYPE OF SERVICE

Dependent Variables	Type of Service: Classroom Instruction		Job Search		OJT	
	Yes	No	Yes	No	Yes	No
Average Number of Weeks Worked during Follow-Up	7.49	7.70	7.79	7.54	9.99	6.73 ****
Employment Rate at Follow-Up	57.47	58.66	59.94	57.22	74.03	52.20 ****
Average Weekly Income at Follow-Up	205.36	207.37	202.50	209.51	232.99	192.35 ****
Welfare Status at Follow-Up Percentage of Terminees on Welfare	32.14	28.18 **	28.11	30.34	14.83	35.13 ****
Education Status at Follow-Up Percentage of Terminees Receiving Education	9.46	8.94	7.21	10.31 ***	6.60	10.08 ***
Response Rate	71.98	70.80	71.57	71.01	75.31	69.55
Sample Size	1970	3664	2054	3580	1628	4006

NOTES: Statistical significance refers to tests of hypothesis that means for a given independent variable are equal over levels of the independent variable.

All values except response rates are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

Sample sizes are number drawn in sample, not number of completers

* p<_.05
** p<_.01
*** p<_.001
**** p<_.0001

TABLE 9

ADJUSTED MEANS/PERCENTAGES FOR FIVE VARIABLES BY TYPES OF SERVICES

Variables		Type of JTP Services: Classroom Teaching		Job Search		OJT	
		Yes	No	Yes	No	Yes	No
Average Number of Weeks Worked during Follow-Up	Tot Eff	8.59	7.18****	8.35	7.20****	9.95	6.83****
	Dir Eff	8.15	7.39	7.64	7.63	8.53	7.33***
Employment Rate at Follow-Up	Tot Eff	65.46	54.89****	64.03	54.72****	75.53	53.00****
	Dir Eff	61.85	56.59**	58.55	58.10	63.34	56.52***
Average Weekly Income at Follow-Up	Tot Eff	225.55	197.86****	213.32	202.64	235.07	196.93****
	Dir Eff	221.74	199.65***	206.73	206.71	228.98	199.03****
Welfare Status at Follow-Up	Tot Eff	25.61	31.30**	26.47	31.34**	19.64	32.88****
	Dir Eff	26.70	30.79**	28.17	30.29	24.43	31.22****
Education Status During Follow-Up	Tot Eff	6.85	10.17*	6.88	10.49**	5.91	10.21***
	Dir Eff	6.94	10.13**	7.16	10.31**	6.61	9.97**

NOTES: Statistical significance refers to tests of hypotheses that the means for a given independent variable (e.g. classroom instruction) are equal.

All values are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

* p<.05
** p<.01
*** p<.001
**** p<.0001

who engaged in OJT. Also, the interaction term between OJT and job search in the regression for receipt of public assistance was significant and positive. This result implies a weak tendency for combining OJT and job search to increase the likelihood of receiving welfare. This evidence is not strong, however, and requires replication before the relationship is established.

The importance of implementing controls is well illustrated by contrasts between table 8 and table 9. Examinations of bivariate differences in table 8 suggests that occupational classroom training might have either no effects on the outcomes or slight effects opposite to those intended. Individuals taking classroom training average fewer weeks worked, are slightly less likely to be working during week 13, earn slightly less, and are a little more likely to be receiving public assistance than those not receiving classroom training. The difference in percentage receiving public assistance is statistically significant; the other differences are not. All those relationships with classroom training are sharply reversed in table 9 where extensive controls are included. Furthermore, all the differences involving classroom training are statistically significant in table 9. Thus, without controls, classroom training appears to be ineffective or slightly detrimental to clients. With controls, quite the opposite conclusion is supported.

Statistical controls increase the estimates of the effects of classroom training but decrease the apparent effects of OJT. Table 8 indicates OJT led to sizeable, significant increases on all of the outcome measures. When the controls are introduced in table 9, these increases, which reflect apparent effects of OJT, are still significant but not as large.

Additional regressions not reported in any of the tables were carried out to help explain the effects of classroom training and OJT on the five outcomes. In these regressions classroom training and OJT were the dependent variables. The independent variables were the same as before except that reasons for termination and the three types of JTP services were omitted. To summarize the findings briefly, the primary predictors of classroom training were found to be welfare status at the time of application and labor market experience. Those on welfare were more likely to receive classroom training than those not on welfare, and those with little labor market experience were more likely to receive classroom training than those with a lot of experience. The main variables affecting OJT were handicap, exoffenders, gender, race, and weeks worked in the year prior to training. Handicapped individuals and exoffenders were less likely to receive OJT than others. Males were more likely to receive OJT than females, blacks were less likely to receive OJT than whites, and those who worked many weeks in the year prior to training were more likely to receive OJT than those who worked few weeks. Thus, the primary predictors of classroom training have a negative impact on the five outcome variables; whereas, the main predictors of OJT have positive effects on the outcomes. These results help to explain

why the bivariate relationships (table 8) between classroom training and the five outcomes change sign and become strong after controls are introduced (table 9), but the original bivariate associations between OJT and the five outcomes are reduced in magnitude by the addition of controls. In brief, the explanation is that hard-to-serve individuals tend to be assigned to classroom training; whereas, the opposite is true of OJT.

Tables 10 and 11 report bivariate and multivariate adjusted means, respectively, according to reason for termination. Strong effects are associated with the reason for termination. Those who entered employment are much more likely to be employed at follow-up, work about three times more weeks during the 13-week follow-up period, earn about $9 more per week and are much less likely to be on welfare than those who did not enter employment. It is somewhat anomalous, however, that when controls are included those who exceeded the program duration (C12) earn more than any other group. The sample size here is fairly small (73 completers) but probably not small enough to account for the anomaly.

The combined results of table 9 and table 11 show that reason for termination is a pivotal factor in determining the outcomes. Table 11 documents that entered employment makes a strong independent contribution to all 5 outcomes. Table 9 shows that reason for termination is an important intervening variable between JTP services and the outcomes.

Service Delivery Areas

This section analyzes differences among SDAs on the five outcomes. If done carefully, such analysis might provide a basis for assessing SDA performance. The proviso, if done carefully, is critically important, however. Obviously, comparison of bivariate differences in means or percentages among SDAs is inadequate, because SDAs differ regarding important determinants of the outcomes and because labor market conditions are not uniform across SDAs. Examples of potential differences include unemployment rate, racial composition, age, and socioeconomic status. Thus, for example, differences of average earnings between the Cleveland SDA and Franklin county could partially be accounted for by differences in the percentage of blacks living in poverty in the two locations.

Table 12 reports SDA difference in four stages. The first column displays bivariate differences of means or percentages (without any controls). These data are presented as a comparison base. Column two shows differences after controlling for all independent variables <u>except</u> JTP services and reason for termination. Column three shows the differences after adding the three JTP service variables to the independent variables already included. Column four adds reason for termination to the set of

TABLE 10

AVERAGE/PERCENTAGES FOR FIVE VARIABLES BY REASON FOR TERMINATION

Variables	Reason for Termination: Entered Employment A01-A05	Exceeded Program C-12	Exceeded 90-Day C-14	Poor Attendance (C06,C07)	Other
Average Number of Weeks Worked during Follow-Up	10.18	2.25	3.81	3.04	2.95
Employment Rate at Follow-Up	75.99	23.03	24.61	24.64	24.51
Average Weekly Income at Follow-Up	214.94	196.42	164.43	150.63	168.98
Welfare Status at Follow-Up Percentage of Terminees on Welfare	16.81	62.23	51.47	55.29	49.29****
Education Status at Follow-Up Percentage of Terminees Receiving Education	6.81	9.41	9.21	10.15	17.01
Response Rate	76.73	63.48	65.38	58.35	61.84
Sample Size	3520	115	494	449	1056

NOTES: Statistical significance refer to tests of hypothesis that all means for a given independent (e.g., age) are equal.

All values except response rates are weighted for nonresponse bias by employment status at termination and welfare status at termination and for sampling stratification by SDA.

Sample sizes are number drawn in sample, not number of completers.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

Table 11

ADJUSTED MEANS/PERCENTAGES FOR FIVE VARIABLES BY REASON FOR TERMINATION

Variables	Reason for Termination: Entered Employment (A01-A05)	Exceeded Program (C12)	Exceeded 90-Day (C14)	Poor Attendance (C06,C07)	Other
Average Number of Weeks Worked during Follow-Up	10.27	3.41	4.76	4.05	3.80****
Employment Rate at Follow-Up	76.39	30.73	42.11	32.04	30.90****
Average Weekly Income at Follow-Up	218.03	230.16	190.32	170.63	196.59****
Welfare Status at Follow-Up Percentage of Terminees on Welfare	19.41	53.81	41.39	45.15	41.77****
Education Status at Follow-Up Percentage of Terminees Receiving Education	7.21	8.77	8.02	8.68	15.11****

NOTES: Statistical significance refer to test of hypothesis that all means for a given independent variable (e.g. classroom instruction) are equal.

All values are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

* $p<.05$
** $p<.01$
*** $p<.001$
**** $p<.0001$

TABLE 12

MEAN/PERCENTAGE DEVIATIONS OF
SDAs FROM STATE MEANS/PERCENTAGES:
OBSERVED DEVIATIONS AND ADUSTED VALUES

			Adjusted Differences		
SDAs	Variables	Observed Differences	Predetermined Variables	Predetermined Variables +JTP Services	Predetermined Variables +JTP Services +Reason Term.
SDA #1	Weeks Worked	1.36*	0.92	0.86	0.47
	Employment	10.86*	8.05	7.85	4.51
	Welfare	- 3.21	0.23	0.13	1.76
	Earnings	4.42	- 1.33	- 3.43	- 3.39
	School Attendance	- 0.96	- 1.98	- 2.28	- 1.72
SDA #2	Weeks Worked	0.54	1.00	0.71	1.44**
	Employment	7.78	12.13*	10.61*	16.18***
	Welfare	- 3.85	- 2.40	- 1.45	- 3.66
	Earnings	-35.13*	-20.61	-20.31	-17.68
	School Attendance	- 0.53	- 0.07	- 0.12	- 1.67
SDA #3	Weeks Worked	-0.31	- 0.68	- 0.95	- 0.54
	Employment	-3.68	- 5.49	- 7.44	- 4.29
	Welfare	1.58	- 0.62	0.73	- 0.88
	Earnings	-14.89	-17.60	-23.19	-22.59
	School Attendance	- 1.32	- 2.59	- 1.87	- 2.10
SDA #4/5	Weeks Worked	-0.71	- 0.10	- 0.28	- 0.30
	Employment	-7.36	- 1.04	- 2.34	- 2.22
	Welfare	8.83	3.49	4.27	3.57
	Earnings	-25.36	-7.06	- 12.12	-13.87
	School Attendance	4.88	3.59	3.96	4.54
SDA #6	Weeks Worked	-0.55	- 0.40	- 0.69	0.36
	Employment	-3.25	- 2.32	- 3.64	4.32
	Welfare	1.86	- 1.27	- 0.71	- 4.79
	Earnings	9.92	11.30	8.33	12.86
	School Attendance	-2.19	- 1.29	- 1.80	- 2.46
SDA #7	Weeks Worked	-0.52	- 0.95*	- 0.32	- 0.42
	Employment	-1.09	- 3.86	0.23	0.03
	Welfare	-11.52***	- 4.84	- 7.77**	- 6.54*
	Earnings	17.32	16.09	23.00*	20.12
	School Attendance	-3.07	- 2.71	- 3.80	- 5.17*

Table 12--Continued

SDAs	Variables	Observed Differences	Adjusted Differences: Predetermined Variables	Adjusted Differences: Predetermined Variables +JTP Services	Adjusted Differences: Predetermined Variables +JTP Services +Reason Term.
SDA #8	Weeks Worked	-1.22***	- 0.69*	- 0.19	0.22
	Employment	-7.93**	- 4.05	- 0.79	1.42
	Welfare	8.31**	1.30	- 1.00	- 2.52
	Earnings	-31.11**	- 7.09	- 3.55	- 2.75
	School Attendance	10.69****	10.72****	9.84****	10.10****
SDA #9	Weeks Worked	1.38**	0.93	-0.16	- 0.46
	Employment	10.18*	8.06	1.74	- 0.19
	Welfare	-11.46**	- 9.15*	- 5.04	- 3.87
	Earnings	18.37	11.05	6.43	6.17
	School Attendance	5.16	4.28	4.95	5.03
SDA #10	Weeks Worked	0.75	0.74	0.86	1.28*
	Employment	0.50	2.39	2.83	3.94
	Welfare	5.90	7.49	7.34	5.79
	Earnings	-30.84	-37.92*	-35.69	-30.54
	School Attendance	- 3.82	-3.69	- 3.32	- 2.39
SDA #11	Weeks Worked	0.49	0.82*	0.84*	0.99**
	Employment	3.05	5.09	4.83	6.72*
	Welfare	0.38	- 4.07	- 3.55	- 4.50
	Earnings	3.87	-4.26	- 5.54	- 2.23
	School Attendance	0.47	-2.65	- 1.92	- 1.67
SDA #12	Weeks Worked	0.18	-0.35	- 0.26	- 0.41
	Employment	- 0.69	- 5.36	- 4.51	- 5.26
	Welfare	3.15	- 6.55	5.63	6.87
	Earnings	7.18	8.59	6.45	3.95
	School Attendance	- 1.03	- 0.63	- 1.49	- 2.57
SDA #13	Weeks Worked	1.26**	0.28	- 0.68	- 0.61
	Employment	6.02	- 1.07	- 6.60	- 7.52*
	Welfare	-15.24****	- 6.88*	- 3.37	- 3.70
	Earnings	90.48****	76.12****	70.08****	72.10****
	School Attendance	-5.21*	-3.34	- 2.90	- 2.00
SDA #14	Weeks Worked	1.77***	1.09*	0.09	- 0.39
	Employment	15.32**	9.85*	3.12	- 0.08
	Welfare	-10.80*	- 4.99	- 0.07	1.78
	Earnings	10.13	3.64	- 5.71	- 5.24
	School Attendance	- 3.38	- 3.35	- 1.17	- 0.88

Table 12--Continued

SDAs	Variables	Observed Differences	Adjusted Differences: Predetermined Variables	Adjusted Differences: Predetermined Variables +JTP Services	Adjusted Differences: Predetermined Variables +JTP Services +Reason Term.
SDA #15	Weeks Worked	0.79	- 0.05	- 0.35	- 0.26
	Employment	5.38	- 0.24	- 2.23	- 1.05
	Welfare	-10.18**	- 0.94	- 0.62	.18
	Earnings	-15.71	-26.01*	-27.29**	-26.26**
	School Attendance	- 1.06	- 1.36	2.12	2.07
SDA #16	Weeks Worked	0.85*	1.14***	1.82****	0.80**
	Employment	8.25**	9.99**	14.65****	8.13**
	Welfare	- 7.24**	- 7.83**	-11.37****	- 7.45**
	Earnings	- 5.57	15.72	22.80*	20.48*
	School Attendance	- 3.20	- 3.03	-4.78*	- 4.42*
SDA #17	Weeks Worked	0.33	0.48	0.31	- 0.10
	Employment	5.49	6.75	5.33	1.66
	Welfare	- 2.23	- 1.09	0.18	1.64
	Earnings	-17.32	-11.82	-12.58	-12.51
	School Attendance	- 4.96*	- 4.46	- 3.54	- 2.56
SDA #18	Weeks Worked	1.60***	1.33**	1.36***	0.56
	Employment	11.38**	9.28*	9.41**	4.27
	Welfare	- 7.24*	- 4.89	- 4.86	- 1.96
	Earnings	- 8.58	-10.66	- 8.18	- 9.65
	School Attendance	5.22*	4.17	4.30*	4.75*
SDA #19	Weeks Worked	1.45	0.67	0.76	0.05
	Employment	9.72	4.09	4.95	- 0.74
	Welfare	- 7.58	- 1.27	- 2.15	0.60
	Earnings	23.65	6.55	7.23	8.51
	School Attendance	- 0.29	-1.13	0.45	1.33
SDA #20	Weeks Worked	1.56****	- 0.44	-0.22	0.08
	Employment	-13.51****	- 5.19*	- 3.93	- 2.30
	Welfare	17.14****	5.68**	4.94*	2.86
	Earnings	-21.41*	- 5.90	-4.55	- 5.24
	School Attendance	0.46	- 0.74	-0.80	0.09
SDA #21	Weeks Worked	-2.18****	- 1.84****	-1.30**	- 1.01**
	Employment	-16.02****	-13.75***	-10.48**	- 7.76*
	Welfare	6.57	6.69*	4.51	4.29
	Earnings	-35.95**	-30.68*	-24.70	-27.02*
	School Attendance	- 0.93	- 0.05	-0.59	- 2.42

Table 12--Continued

SDAs	Variables	Observed Differences	Adjusted Differences: Predetermined Variables	Adjusted Differences: Predetermined Variables +JTP Services	Adjusted Differences: Predetermined Variables +JTP Services +Reason Term.
SDA #22	Weeks Worked	- 0.41	- 0.28	0.01	0.58
	Employment	- 3.40	- 2.83	- 1.31	1.34
	Welfare	5.53	1.26	0.44	- 1.77
	Earnings	- 1.95	6.36**	9.94	14.97
	School Attendance	- 3.94	- 3.98	- 3.81	- 3.07
SDA #23	Weeks Worked	- 0.73	- 1.13**	- 1.07**	- 0.98**
	Employment	- 2.19	- 4.79	- 4.24	- 3.11
	Welfare	- 0.38	3.80	3.41	3.65
	Earnings	-20.21	-32.06**	-28.56**	-28.80**
	School Attendance	- 1.92	- 0.32	- 0.59	- 1.78
SDA #24	Weeks Worked	1.16*	0.97	0.53	0.26
	Employment	7.89	5.07	1.93	0.37
	Welfare	- 3.94	- 4.18	- 1.72	- 0.52
	Earnings	- 8.71	-12.54	-15.90	-17.60
	School Attendance	- 3.38	-3.12	- 1.75	- 2.08
SDA #25	Weeks Worked	0.93	0.25	0.25	- 0.60
	Employment	6.73	1.45	1.36	- 4.15
	Welfare	-10.09*	2.05	2.18	5.64
	Earnings	30.95*	22.36	23.21	19.94
	School Attendance	- 1.78	- 1.32	- 1.20	- 1.15
SDA #26	Weeks Worked	- 0.46	- 0.46	- 0.51	- 0.73
	Employment	- 3.07	- 4.59	- 4.64	- 5.92
	Welfare	- 3.56	2.05	1.75	2.67
	Earnings	37.10*	13.61	8.83	5.35
	School Attendance	- 3.29	- 2.46	- 2.96	- 3.31
SDA #27	Weeks Worked	- 0.26	- 1.34	- 1.48	- 1.63*
	Employment	- 4.05	-12.01	-12.63	-13.21
	Welfare	0.22	9.09	9.32	10.07
	Earnings	98.47***	64.13**	64.12**	61.92*
	School Attendance	- 0.30	1.26	1.04	0.71
SDA #28	Weeks Worked	0.28	- 0.15	0.34	- 1.08
	Employment	1.17	- 4.72	- 1.88	-11.18
	Welfare	- 6.68	- 0.95	- 2.75	2.75
	Earnings	41.92	18.76	26.25	22.06
	School Attendance	- 5.75	- 4.00	- 4.25	- 3.70

Table 12--Continued

SDAs	Variables	Observed Differences	Adjusted Differences: Predetermined Variables	Adjusted Differences: Predetermined Variables +JTP Services	Adjusted Differences: Predetermined Variables +JTP Services +Reason Term.
SDA #29	Weeks Worked	-2.90****	- 1.84**	- 1.59**	- 0.46
	Employment	-27.13****	-19.86****	-18.02***	-10.40*
	Welfare	30.87****	17.63****	16.11****	12.32**
	Earnings	-10.18	9.69	7.36	9.48
	School Attendance	9.64**	8.00**	7.03*	5.65
SDA #30	Weeks Worked	1.10	0.17	- 0.55	- 0.36
	Employment	9.77	2.88	- 1.19	0.54
	Welfare	- 9.13	- 2.49	0.01	- 0.30
	Earnings	27.73	- 3.89	- 9.78	-10.55
	School Attendance	- 3.47	- 2.85	- 2.59	- 3.60
SDA #31	Weeks Worked	0.25	- 0.13	- 0.57	- 0.20
	Employment	3.01	- 0.46	- 3.35	- 0.78
	Welfare	1.22	5.30	7.30*	5.52
	Earnings	10.47	- 0.85	- 6.84	- 7.79
	School Attendance	5.08*	5.87**	6.68**	6.43**

NOTES: Entries are deviations from statewide averages or percentages.

All values, including statewide averages/percentages were weighted to compensate for different sampling rates by SDA and for different completion rates by employment status at application and by welfare status at application.

Overall differences among SDAs are statistically significant at $p \leq .0001$ for each variable in each column.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

independent variables. The entries in table 12 are mean or percentage differences between the SDA average and the statewide average.[6]

One would expect SDAs to differ regarding the five outcomes, for a variety of reasons. This expectation is strongly confirmed by the data in column 1. The statistical tests of overall differences among SDAs (see note 4 to table 12) indicate that the variation in averages and percentages among the SDAs are highly unlikely to be due to random sampling error. The chance that the differences are due to sampling error alone is less than 1 in 10,000 for each outcome.

The remaining columns reflect an incremental strategy of trying to identify why SDAs differ. The hypotheses tested in column two are that SDAs differ on the five outcomes because they also differ on the predetermined controls (e.g., race, gender, labor market experience). These hypotheses also are rejected for every outcome. The hypotheses associated with column three are that JTP services provided by SDAs account for differences in the outcomes across SDAs that are not already accounted for by predetermined variables. The data also indicate strong rejection of these hypotheses. Finally, column four tests the hypotheses that, after controlling for predetermined variables and JTP services, SDA differences in the outcomes are due to reason for termination (primarily entered employment). Again the hypotheses are rejected. In summary, SDAs do differ on all five outcomes, and these differences are not entirely accounted for by predetermined differences among their clients, the JTP services they provide, or the entered employment rates (more generally, reason for termination).

The statistical tests indicate whether differences are likely due to sampling error; they are not good indications of the size of the differences.[7] The main entries in table 12 show the deviation of each SDA from the statewide total. The statistical significance of these differences is indicated by asterisks (see notes to table). It is clear from these results that the magnitude of the SDA effects are reduced by the controls. With only very minor exceptions, the average magnitude (absolute value) of the SDA deviations from the statewide average or percentage decreases monotonically with each addition of a set of controls. Youngstown (SDA 29) is a particularly salient case in point. Without any controls, Youngstown respondents are 27 percent less likely to be employed at follow-up and nearly 31 percent more likely to be receiving public assistance than are individuals throughout the state. Youngstown respondents also work on the

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[6]As in all preceding calculations, entries in table 12 are weighted to compensate for differing sampling rates across SDAs, different response rates by employment status, and different response rates by welfare status.

[7]Statistical tests depend both on the size of differences and on sample size.

average nearly 3 weeks less than the statewide average. Introducing controls for predetermined variables reduces the discrepancy in employment rate to 20 percent, the discrepancy in weeks worked to less than two, and the discrepancy in receiving welfare to 18 percent. Adding controls for JTP services and reason for termination further reduces these differences. With all the controls, Youngstown respondents are only 10 percent less likely to be employed than the state total, work only about one-half week less, and are only about 12 percent more likely to receive public assistance.

The results in table 12 are consistent with the model depicted in figure 2. This model is a generalization of the model in figure 1. In evaluating SDA performance, one is interested in

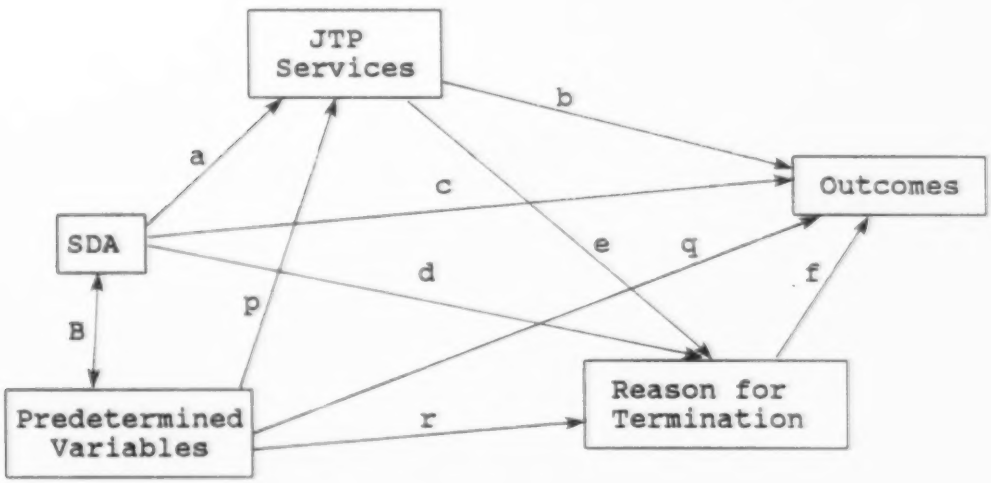

Figure 2. Model of SDA effects

the sum total of all direct and indirect effects of the SDAs. The direct effect is path c. This is the part that cannot be explained by SDA activities (services and placements). The path ab is the indirect effect due to differences in the quantity of services offered by different SDAs. Path df is the indirect effect due to differences in reason for termination (primarily placement rates) among SDAs. Path aef is the indirect effect through both services and reason for termination. As shown in table 9, the primary mechanism is that classroom training, OJT, and job search enhance the chance of employment at termination, and employment at termination improves outcomes at follow-up. The paths involving ß, p, q, and r all represent spurious differences among SDAs--those due to SDA differences on the predetermined variables.

Comparison of column one to column two in table 12 indicates the extent to which SDA differences on the outcomes are due to

differences on the predetermined variables--that is, to what extent are differences in outcomes among SDAs due to variation in the types of clients served by different SDAs? Column one includes differences operating through ß, p, q, and r. Column two excludes these spurious differences but summarizes the total estimated effects of the SDAs--c + ab + df + aef. The primary evaluation of an SDA, based on these data, then, would focus on differences in column two. Column three and column four provide diagnostics. They address the question "To what extent can SDAs improve their outcomes by increasing services and being proactive regarding the reason for termination?" The answer yielded by the data is "to some extent," but SDA differences not explained by the amount of services and placement rates remain.

It is possible that some SDA differences are due to the effectiveness (as contrasted to quantity) of their services. To test this idea, we ran regressions in which first order interactions between SDA and the three types of services (classroom, OJT, job search) were included. The idea here is that the effect of a service such as classroom training might be stronger in some SDAs than in others. The results of this analysis (not tabulated) did not show substantial differences among SDAs in the effectiveness of their services. A slight tendency was detected for the effectiveness of job search in keeping individuals off welfare to vary across SDAs, however. Also, small but significant SDA x services interactions appeared in the equation for school attendance.

Predetermined Variables

This section presents analyses of the relationships between the five outcomes and five independent variables that are likely to influence the outcomes. These five independent variables are employment status at the time of application, family status at time of application, welfare status at the time of application, education status at the time of application, and barriers to employment measured at the time of application. All these variables were included as controls in previous regressions; in this section we examine their effects. For each relationship, bivariate mean and percentages differences are presented as a basis of comparison and adjusted means are shown to assess net impacts of the independent variables on the outcomes. The independent variables included here and procedures for calculating adjusted means are the same as those used previously.

Tables 13-22 show the results. Education has a statistically significant impact on all outcomes except school attendance during the follow-up period. Some of the patterns of relationships with education are not as anticipated, however, the observed mean earnings of college graduates is less than the mean for those with some college. The adjusted mean earnings of college graduates is below the mean for high school graduates. Additionally, the adjusted percentage of college graduates receiving public assistance is higher than the percentage for high school graduates and

TABLE 13

MEANS/PERCENTAGES FOR FIVE VARIABLES BY EDUCATION STATUS AT APPLICATION

Variables	Education Status at Time of Application: Dropout	H.S. Graduate	Some College	College Grad.
Average Number of Weeks Worked during Follow-Up	6.36	7.93	8.13	9.61****
Employment Rate at Follow-Up	48.05	60.79	61.27	76.91****
Average Weekly Income at Follow-Up	180.94	208.80	226.56	215.27****
Welfare Status at Follow-Up Percentage of Terminees on Welfare	42.99	27.19	20.66	13.73****
Education Status at Follow-Up Percentage of Terminees Receiving Education	9.57	7.76	12.11	12.53***
Response Rate	64.13	73.44	74.83	77.93
Sample Size	1553	3054	882	145

NOTES: Statistical significance refers to tests of hypothesis that all means for a given dependent variable are equal across levels of education.

All values except response rates are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

Sample sizes are number drawn in sample, not number of completers.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

TABLE 14

ADJUSTED MEANS/PERCENTAGES FOR FIVE VARIABLES BY EDUCATION

Variables	Education Status at Time of Application: Dropout	H.S. Graduate	Some College	College Grad.
Average Number of Weeks Worked during Follow-Up	7.20	7.69	8.05	8.29***
Employment Rate at Follow-Up	54.42	58.97	60.72	67.55***
Average Weekly Income at Follow-Up	186.78	208.95	233.12	188.26****
Welfare Status at Follow-Up Percentage of Terminees on Welfare	34.37	28.79	23.77	31.47****
Education Status at Follow-Up Percentage of Terminees Receiving Education	9.35	8.19	11.33	8.37

NOTES: Statistical significance refers to tests of hypothesis that all means for a given dependent variable are equal across levels of education.

All values are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

TABLE 15

AVERAGES/PERCENTAGES FOR FIVE VARIABLES BY WELFARE STATUS AT APPLICATION

Variables	Welfare Status at Time of Application: AFDC Recipient	General	Nonwelfare
Average Number of Weeks Worked during Follow-Up	6.30	5.64	8.86****
Employment Rate at Follow-Up	47.62	41.29	68.36****
Average Weekly Income at Follow-Up	202.30	168.89	214.44****
Welfare Status at Follow-Up Percentage of Terminees on Welfare	57.67	54.28	8.20****
Education Status at Follow-Up Percentage of Terminees Receiving Education	11.15	10.13	7.77**
Response Rate	71.22	63.37	74.36
Sample Size	2036	1032	2566

NOTES: Statistical significance refers to tests of hypothesis that all means for a given dependent variable are equal over the three categories of welfare status (AFDC, general, no welfare).

All values except response rates are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

Sample sizes are number drawn in sample, not number of completers.

* $p<.05$
** $p<.01$
*** $p<.001$
**** $p<.0001$

TABLE 16

ADJUSTED MEANS/PERCENTAGES FOR FIVE VARIABLES BY WELFARE STATUS AT APPLICATION

Variables	Welfare Status at Time of Application: AFDC Recipient	General	Nonwelfare
Average Number of Weeks Worked during Follow-Up	8.33	7.07	7.44**
Employment Rate at Follow-Up	62.72	51.74	58.03***
Average Weekly Income at Follow-Up	206.50	188.44	213.03*
Welfare Status at Follow-Up Percentage of Terminees on Welfare	39.97	46.42	17.96****
Education Status at Follow-Up Percentage of Terminees Receiving Education	7.96	9.97	9.45

NOTES: Statistical significance refers to tests of hypothesis that all means for a given dependent variable are equal over the three categories of welfare status (AFDC, general, no welfare).

All values are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

* $p<.05$
** $p<.01$
*** $p<.001$
**** $p<.0001$

TABLE 17

AVERAGES/PERCENTAGES FOR FIVE VARIABLES BY FAMILY STATUS AT APPLICATION

Variables	Family Status at Time of Application: Single Parent with ≥1 Child under 6 yrs	Single Parent with ≥ 1 Child 7-17 yrs	Parent in 2 Parent Home	Other Family Member	Non-Dependent
Average Number of Weeks Worked during Follow-Up	6.51	6.53	8.67	7.91	7.59****
Employment Rate at Follow-Up	49.09	50.37	66.32	59.72	57.84
Average Weekly Income at Follow-Up	187.19	188.29	241.71	212.71	187.20****
Welfare Status at Follow Up Percentages of Terminees on Welfare	49.51	45.66	23.82	13.92	24.73****
Education Status at Follow-Up Percentage of Terminees Receiving Education	14.53	10.53	7.85	5.55	8.70****
Response Rate	70.19	74.83	75.14	76.32	65.90
Sample Size	681	878	1625	397	2053

NOTES: Statistical significance refers to tests of hypothesis that all means for a given dependent variable are equal over categories of family status.

All values except response rates are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

Sample sizes are number drawn in sample, not number of completers.

* $p < .05$
** $p < .01$
*** $p < .001$
**** $p < .0001$

TABLE 18

ADJUSTED MEANS/PERCENTAGES FOR FIVE VARIABLES BY FAMILY STATUS AT APPLICATION

Variables	Family Status at Time of Application: Single Parent w/≥ 1 Child under 6yrs.	Single Parent with ≥ 1 Child 7-17 yrs.	Parent in 2 Parent Home	Other Family Member	Non-Dependent
Average Number of Weeks Worked during Follow-Up	7.18	7.36	7.92	7.22	7.75*
Employment Rate at Follow-Up	53.30	55.66	61.30	54.91	59.20*
Average Weekly Income at Follow-Up	211.44	209.73	221.50	204.64	195.39**
Welfare Status at Follow-Up Percentage of Terminees on Welfare	35.70	33.51	29.00	26.85	27.13*
Education Status at Follow-Up Percentage of Terminees Receiving Education	12.65	9.24	8.53	8.03	8.68

NOTES: Statistical significance refers to tests of hypothesis that all means for a given dependent variable are equal over categories of family status.

All values are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

* $p<.05$
** $p<.01$
*** $p<.001$
**** $p<.0001$

TABLE 19

AVERAGES/PERCENTAGES FOR FIVE VARIABLES BY BARRIERS TO EMPLOYMENT AT APPLICATION

Variables	Barriers to Employment			
	Offender	Handicapped	Limited English	No Barrier
Average Number of Weeks Worked during Follow-Up	6.81	7.07	9.40	7.73**
Employment Rate at Follow-Up	52.46	50.87	62.12	59.27*
Average Weekly Income at Follow-Up	199.91	171.27	187.88	209.65**
Welfare Status at Follow-Up Percentage of Terminees on Welfare	37.20	22.66	33.21	29.39**
Education Status at Follow-Up Percentage of Terminees Receiving Education	8.58	6.17	34.67	9.22***
Response Rate	52.05	76.36	69.70	72.61
Sample Size	438	330	33	4833

NOTES: Statistical significance refers to tests of hypothesis that all means for a given dependent variable over barriers to employment.

All values except response rates are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

Sample sizes are number drawn in sample, not number of completers.

* $p<.05$
** $p<.01$
*** $p<.001$
**** $p<.0001$

TABLE 20

ADJUSTED MEANS FOR FIVE VARIABLES BY BARRIERS TO EMPLOYMENT

Variables	Barriers to Employment: Offender	Handicapped	Limited English	No Barrier
Average Number of Weeks Worked during Follow-Up	7.80	7.58	8.15	7.62
Employment Rate at Follow-Up	60.25	54.94	46.79	58.44
Average Weekly Income at Follow-Up	217.40	184.42	155.40	207.91*
Welfare Status at Follow-Up Percentage of Terminees on Welfare	31.16	26.17	33.03	29.54
Education Status at Follow-Up Percentage of Terminees Receiving Education	8.79	5.00	27.63	9.32***

NOTES: Statistical significance refers to tests of hypothesis that all means for a given dependent variable are equal over barriers to employment.

All values are weighted for nonresponse bias by employment status at application and welfare status at application and stratification by SDA.

* $p<.05$
** $p<.01$
*** $p<.001$
**** $p<.0001$

TABLE 21

AVERAGES/PERCENTAGES FOR FIVE VARIABLES BY EMPLOYMENT STATUS AT APPLICATION

Dependent Variables	Employment Status at Time of Application: Employed	Unemployed	Not in Labor Force
Average Number of Weeks Worked during Follow-Up	10.57	7.37	6.32****
Employment Rate at Follow-Up	81.11	56.28	47.62****
Average Weekly Income at Follow-Up	199.78	212.65	180.18****
Welfare Status at Follow-Up Percentage of Terminees on Welfare	10.23	30.32	43.02****
Education Status at Follow-Up Percentage of Terminees Receiving Education	9.23	9.03	9.43
Response Rate	79.46	70.00	71.06
Sample Size	628	4230	774

NOTES: Statistical significance refers to tests of hypothesis that the means for the three levels of employment status are equal for each dependent variable.

All values are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

Sample sizes are number drawn in sample, not number of completers.

* p<_.05
** p<_.01
*** p<_.001
**** p<_.0001

TABLE 22

ADJUSTED MEANS/PERCENTAGE FOR FIVE VARIABLES BY EMPLOYMENT STATUS AT APPLICATION

Variables	Employment Status at Time of Application: Employed	Unemployed	Not in Labor Force
Average Number of Weeks Worked during Follow-Up	9.21	7.42	7.56***
Employment Rate at Follow-Up	68.64	57.00	56.97*
Average Weekly Income at Follow-Up	171.72	210.76	212.47**
Welfare Status at Follow-Up Percentage of Terminees on Welfare	28.20	29.53	30.20
Education Status at Follow-Up Percentage of Terminees Receiving Education	8.55	9.34	8.32

NOTES: Statistical significance refers to tests of hypothesis that the means for the three levels of employment status are equal for each dependent variable.

All values are weighted for nonresponse bias by employment status at application and welfare status at application and for sampling stratification by SDA.

Sample sizes are number drawn in sample, not number of completers.

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
**** $p \leq .0001$

for those with some college. Evidently, college graduates in this sample comprise a special group.

Welfare status at application also has a statistically significant association with all the outcomes in table 15 and with all but education status during follow-up in table 16. Again, two anomalies are observed. The adjusted average number of weeks worked for those not receiving welfare at application is lower than the percentage for AFDC recipients. Also, the adjusted percentage employed at week 13 is lower for nonwelfare recipients at application than for AFDC recipients. The bivariate differences in table 15 match the expected pattern.

Effects of family type (table 18) are relatively small, and the effects of the barriers (offender, handicapped, LEP) generally are small to moderate (table 20). The relatively small effects of barriers probably are due in part to the small number of cases with barriers to employment. The direct effects of employment status at application are small (table 22); however, bivariate differences across employment categories (table 21) are substantial.

In addition to the tabulated results, the regression analysis revealed that labor market experience has a strong and highly statistically significant impact on each of the five outcomes. It has a direct impact on weeks worked, the chance of being employed, and earnings. It has an inverse effect on welfare status and school attendance.

The analyses in this section reveal that most of the controls used in prior sections of this report should be implemented if valid conclusions regarding SDA impacts are to be drawn. The primary class of control variable that has been omitted is local labor market conditions--demand factors. Indicators of demand such as local unemployment rate and labor force participation rates are potentially important controls.

Summary

The salient findings of this study are that JTP Ohio services have the intended effects on labor market outcomes. Classroom training and OJT increase employment, increase earnings, and reduce the chance of being on welfare. Job search increases employment and reduces the likelihood of being on welfare.

The reason for termination from JTP Ohio training programs is a critical mediating factor between services received and the labor market outcomes. Those who leave training to enter employment are much more likely to be working 13 weeks later, work more weeks during the 13-week follow-up period, earn more during week 13, and are less likely to be on welfare than those who left for other reasons. All the impact of job search on labor market outcomes feed through entered employment. A sizable portion of direct effects of classroom training and OJT also operates through entered employment.

Differences among SDAs on the labor market outcomes are fairly large and highly statistically significant. Controls for exogenous background variables reduce these differences substantially, and added controls for JTP services and reason for termination reduce the differences still further. Yet, after all controls are included, highly statistically significant differences remain among SDAs.

Further discussion of these results is provided in the concluding chapter.

CHAPTER 4

DISCUSSION AND RECOMMENDATIONS

The data analyzed here show the expected relationships between predetermined variables such as education, labor market experience, race, age, and gender and the five outcomes examined in this report--weeks worked during the 13-week follow-up period, employment status in week 13, earnings in week 13 of those who were employed, welfare status in week 13, and school attendance during the 13-week period. The most interesting findings, however, are that JTP services have the intended effects, and entered employment is a pivotal intermediary between JTP services and the outcomes. The total effects of classroom training, job search, and OJT on employment in week 13 and weeks worked are strong and positive. The effects on receiving public assistance are strong and negative. Additionally, classroom training and OJT increase earnings.

Addition of control for the reason for termination substantially reduces all these effects and reduces job search effects on all outcomes except education status to near zero. Reason for termination has a strong impact on all the outcomes. Our findings agree roughly with those of Hollenbeck and Bennici (1987). Job search helps one find a job but does not improve earnings.

The encouraging aspects of these findings is that factors directly under control of public policy and administration do influence economic and social outcomes. In one sense, classroom training appears to be a particularly useful tool because it tends to serve those with a lower socioeconomic profile than does OJT.

A potentially useful quantitative model to assist in evaluating SDA performance was sketched in this report (see figure 2 and table 12). The basic idea is to observe the deviation of the adjusted mean on each outcome for each SDA from the corresponding state average. The adjusted means compensate for differences among SDAs in the socioeconomic composition of the clients they serve (see column two of table 12). It is possible that statistical tests of whether these adjusted means differ from the state means could be used in the evaluations. For example, incentive grants could be provided to SDAs who perform above a state standard to a statistically significant degree. The sole criterion should not be statistical significancy, however, because statistical significance depends so heavily on sample size.

Although the analyses reported here did not support the view that effectiveness of JTP services varies among SDAs, tests for the possibility of such variations should probably still be included in future research and evaluation. An additive regression analysis implies that any differences among SDAs on the outcome variables are due solely to the quantity of services provided. Take classroom training as an example and specify an

interaction term to capture the notion that classroom training in some SDAs is more effective than it is in other SDAs.

$$y_{ij} = a + b_j + c \cdot CLASR_{ij} + d_j \cdot CLASR_{ij} + e_{ij}$$

where

y_{ij} = outcome such as earnings for individual i in SDA j,
a = intercept constant,
b_j = additive effect of SDA j,
c = additive effect of classroom training,
d_j = interaction component of classroom and SDA effects,
CLASR = classroom training (measured as yes, no or as a quantity),
e_{ij} = random disturbance.

It is seen from this specification that the effects of classroom training are

$$\text{classroom effects} = c + d_j.$$

Since j indexes SDAs, the effects differ in different SDAs.

It is worth noting that one potentially important advantage of evaluating SDA performance with individual-level data is that the added detail of individual information allows one to separate quantity and quality effects. Averaging both sides of the above specification yields

$$\bar{y}_j = a + b_j + (c + d_j)\overline{CLASR}_j + \bar{e}_j.$$

This equation could not be estimated with only SDA averages because it contains more parameters (a, b_j, c, d_j) than there are observations.

An important aspect of the analysis conducted here is that no one is included in the sample who had not participated in JTP in some fashion. Lack of a comparison group makes it impossible to assess the overall effects of participation. Absence of a comparison group also means that SDA evaluations necessarily depend on comparisons among JTP clients in different SDAs. A type of "grading on the curve" therefore is implied. With a comparison group it would at least be feasible to attempt to establish evaluation criteria based on the extent to which JTP clients fare better than nonclients rather than criteria based solely on whether clients in one SDA do better than clients in other SDAs.

Implementing the strategy sketched here would require careful study, however, to avoid both the reality and the appearance of being unfair to some SDAs (e.g., Youngstown). At minimum, local labor market indicators of demand should be added to the regression equations.

Additionally, it would be advisable to draw on several experts on training, methodology, and evaluation to help formulate appropriate procedures. An unusual opportunity to integrate theory and practice is apparent here. Our evidence strongly supports academic findings that education and labor market experience are critical determinants of the labor-market outcomes. In developing an evaluation strategy, it would be desirable to further draw on the best available knowledge. It appears useful to hold a conference to examine critical issues such as these:

- What outcome variables would best capture the impacts of JTP programs?
- What control variables would best adjust for differences among clients served by different SDAs?
- What sampling strategy is optimum, given resource constraints?
- What statistical models/analyses should be conducted?
- How should the evaluation involve SDA leaders to assure their cooperation?
- How can qualitative data based on direct observation best be incorporated into the analysis?
- How can quantity and quality of services be separated in the statistical analysis (See suggestion above)
- What local labor market indicators of demand and demographic composition variables should be included?

The preliminary analyses reported here indicate that a first-rate evaluation is feasible. A large and growing literature on evaluation of training programs is available (see, e.g., Stromsdorfer 1987 for a recent review). This literature should be combined with practical experience to develop an evaluation model.

REFERENCES

Cohen, Jacob, and Cohen, Patricia. Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences. New Jersey: Lawrence Erlbaum Associates, Publishers, 1983.

Hollenbeck, Kevin M., and Bennici, Frank. A Follow-Up Study of the Delivery of Title III Services to Dislocated Workers in Ohio. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1987.

Mincer, Jacob. Schooling, Experience, and Earnings. New York: National Bureau of Economic Research, 1974.

Parcel, Toby L., and Mueller, Charles W. Ascription and Labor Markets: Race and Sex Differences in Earnings. New York: Academic Press, 1983.

Pindyck, Robert S., and Rubinfeld, Daniel L. Econometric Models and Economic Forecasts. New York: McGraw-Hill, 1981.

Stromsdorfer, Ernst W. "Economic Evaluation of the Comprehensive Employment and Training Act: An Overview of Recent Findings and Advances in Evaluation Methods." Evaluation Review 2 (1987): 387-394.

United States Department of Labor Employment and Training Administration. Follow-Up Technical Assistance Guide for Post-program Data Collection Under the Job Training and Partnership Act, Version 3.0, June 1986.